

Claims

1. An electromotive soil cultivation appliance for cultivating soil in the fields of agriculture and horticulture, particularly a rotary hoe, with an asynchronous rotary current motor (4) for driving a rotatable cultivating tool (3),
characterized in
that the soil cultivation appliance comprises a frequency converter (10) for generating a drive voltage of adjustable frequency for the rotary current motor (4), wherein the frequency converter (10) is connected to a manually operated adjusting device (8, 9) for varying the frequency of the drive voltage, and in that the rotary current motor (4) is realized in such a way that a nearly constant torque of the rotary current motor (4) is maintained over a broad range of speeds of the motor (4) that can be adjusted by means of the adjusting device (8, 9), wherein the nearly constant torque is maintained by adapting or suitably choosing the number of poles and the number of turns of the rotary current motor (4), and wherein a sufficiently high torque is maintained in the lower speed range by providing a correspondingly high number of turn grooves and/or poles.
2. The soil cultivation appliance according to Claim 1, characterized in
that the rotary current motor (4) is realized in such a way that a nearly constant torque is maintained over a speed range of the rotary current motor (4) between 20 and more than 2000 rpm, particularly up to 6500 rpm.
3. The soil cultivation appliance according to Claim 1, characterized in

that the rotary current motor is realized in such a way that a nearly constant torque is maintained over a speed range of the rotary current motor (4) between 10 and more than 3000 rpm.

4. The soil cultivation appliance according to one of Claims 1-3, characterized in that a sufficiently low inductive resistance is maintained in the higher speed range by choosing a correspondingly small number of turns.
5. The soil cultivation appliance according to one of Claims 1-4, characterized in that the torque of the rotary current motor (4) varies by no more than 10 % over the broad range of motor speeds (4).
6. The soil cultivation appliance according to one of Claims 1-5, characterized in that the frequency converter (10) and the adjusting device (8, 9) are designed for generating a drive voltage for the rotary current motor that has a maximum frequency in excess of 100 Hz, particularly 120 Hz.
7. The soil cultivation appliance according to one of Claims 1-6, characterized in that an electromechanical control (11) is provided for reversing the polarity of the rotary current motor (4) such that the soil cultivation appliance can be operated in a forward mode and a reverse mode, wherein a speed limiter limits the speeds of the rotary current motor in the reverse mode, namely to no more than 50 % of the maximum speeds attainable in the forward mode.
8. The soil cultivation appliance according to Claim 7,

characterized in

that the electromechanical control (11) is connected to two independent switching elements (7, 8) that need to be actuated simultaneously in order to start the appliance, wherein the electromechanical control is realized in such a way that one switching element (7) needs to be continuously held in the depressed position by the user against the force of a spring in order to operate the appliance and the other switching element (8) serves for selecting the forward or reverse mode.

9. The soil cultivation appliance according to Claim 8, characterized in
that the electromechanical control (11) is realized in such a way that the electrical operation of the appliance is interrupted for changing over between the forward and the reverse mode
10. The soil cultivation appliance according to one of Claims 7-9, characterized in
that the frequency converter (10) has a direct voltage output for supplying the electromechanical control (11) with power.
11. The soil cultivation appliance according to one of Claims 7-10, characterized in
that the electromechanical control (11) comprises a microprocessor control.
12. The soil cultivation appliance according to one of Claims 1-11, characterized in
that the adjusting device (9) comprises a potentiometer.